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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/945,491	08/30/2001	Leonard Forbes	303.523US2	4565
21186	7590	10/17/2003	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.			KANG, DONGHEE	
P.O. BOX 2938			ART UNIT	PAPER NUMBER
MINNEAPOLIS, MN 55402			2811	

DATE MAILED: 10/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/945,491

Applicant(s)

FORBES ET AL.

Examiner

Donghee Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-47, 61, 63, 64, 66-69 and 71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-47, 61, 63, 64, 66-69 and 71 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Remarks***

1. Applicant's Amendment and Response to Paper No.6 have been entered and made of Record. Claims 48-60, 62, 65, 70 & 72-94 are cancelled. Thus claims 1-47, 61, 63-64, 66-69 & 71 are pending in this application.

### ***Claim Objections***

2. Claims 1 & 34 are objected to because of the following informalities:  
  
Re claim 1, comma (,) should be inserted between first and second.  
  
Re claim 34, a tope is misspelled. It should be top. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 1: the phrase "means for moving at least a portion of the second conductive member as a solid unit" is unclear how to move the portion of the second conductive member as a solid unit. The figure shows that whole second conductive member moves rather than a portion.

Claims 2-5 are rejected because each includes the limitations of independent claim 1.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 6 is rejected under 35 U.S.C. 102(e) as being anticipated by Jain et al. (US 6,107,165).

Jain et al. teach an antifuse structure in an integrated circuit, comprising (Fig.18):

first (12) and second (28) noncontacting conductive members; and a layer (20) comprising hydrogen in solid solution adjacent to one of the first and second noncontacting conductive members (Col.4, lines 33-38).

7. Claims 20-25, 27 & 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Velde et al. (US 4,528,583).

Velde et al. teach an antifuse structure integrated circuit, comprising (Figs.1-3):

a vacuum or gas filled, hollow space chamber (21) having a top bounded by aluminum wire (10), a bottom bounded by a semiconductor substrate that includes a silicon oxide (6) covered epitaxial layer (3), and interior walls extending between the top

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and bottom, a titanium contact layer (8), and a platinum layer (11). Velde et al. do not expressly teach the titanium contact layer is a high-gas-saturable layer and the platinum layer is low-gas-saturable layer, wherein the high-gas-saturable layer has a hydrogen-gas-solubility at least 10 times greater than that of the conductive, low-gas-saturable layer. However, this feature is inherent in Velde's device because they are composed of same material.

8. Claims 36 is rejected under 35 U.S.C. 102(b) as being anticipated by Jun (US 5,652,169).

Re claim 36, Jun teaches a structure for a programmable electrical connection in an integrated circuit, comprising (Fig.7H):

Chamber having bottom, a top, and two or more opposite interior-wall extending between the top and bottom; a conductive layer within the chamber and contacting at least two of the opposing interior-wall portions; and one or more conductive members, each overhanging the top of the chamber.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jun (US 5,652,169).

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Re claims 32 & 34, Jun teaches an antifuse structure in an integrated circuit, comprising (Fig.9H):

A chamber having a bottom and a top and one or more interior walls extending between the top and bottom; a conductive layer within the chamber and comprising aluminum (Col.7, line 17-20); and first and second conductive members each overhanging the top of the chamber and contacting the conductive layer within the chamber. Jun does not expressly teach first and second conductive members overhanging the top of the chamber by at least 250 Å. It is an obvious matter of routine experimentation to find the optimal distance ranges. Generally, difference in distance will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such thickness is critical.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the distance of the conductive members, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Re claim 33, Jun teaches the chamber comprising a substrate; and an insulative layer on the substrate and having an opening exposing a portion of the substrate, with the exposed portion of the substrate defining at least a portion of the bottom of the chamber of the chamber and the opening defining the interior sidewalls of the chamber.

Re claim 35, Jun teaches the first and second conductive members are fused to the conductive layer.

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11. Claims 26, 30 & 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Velde et al. (US 4,528,583).

Velde et al. teach an antifuse structure integrated circuit, comprising (Figs.1-3):  
a vacuum or gas filled, hollow space chamber (21) having a top bounded by aluminum wire (10), a bottom bounded by a semiconductor substrate that includes a silicon oxide (6) covered epitaxial layer (3), and interior walls extending between the top and bottom, a titanium contact layer (8), and a platinum layer (11). Velde et al. do not expressly teach the titanium contact layer is a high-gas-saturable layer and the platinum layer is low-gas-saturable layer, wherein the high-gas-saturable layer has a hydrogen-gas-solubility at least 10 times greater than that of the conductive, low-gas-saturable layer. However, this feature is inherent in Velde's device because they are composed of same material.

Velde et al. do not expressly teach first and second conductive members overhanging the top of the chamber by at least 250 Å. It is an obvious matter of routine experimentation to find the optimal distance ranges. Generally, difference in distance will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such thickness is critical.

#### ***Double Patenting***

12. Claims 7-13, 16-19, 28, 37-47, 61, 63-64, 66-69, & 71 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over U.S. Patent No. 6,288,437. See office action mailed on April 15, 2003.

#### ***Allowable Subject Matter***

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13. Claims 7-13, 16-19, 28, 37-47, 61, 63-64, 66-69, & 71 will be allowable over the prior art of record upon timely filing of a terminal disclaimer.

**Conclusion**

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghee Kang whose telephone number is 703-305-9147. The examiner can normally be reached on Maxiflex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C Lee can be reached on 703-308-1690. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Donghee Kang*

Donghee Kang  
Examiner  
Art Unit 2811

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